1050-05-76 **Stephen S. Graves** (sgraves@syr.edu), Syracuse University, Mathematics Department, 215 Carnegie, Syracuse, NY 13244-1150, and **Mark E. Watkins*** (mewatkin@syr.edu), Syracuse University, Mathematics Department, 215 Carnegie, Syracuse, NY 13244-1150. *Growth of Homogeneous Planar Tessellations.*

A (planar) tessellation T is an embedding in the plane without accumulation points of a 3-connected, one-ended, locally finite simple graph. With a single vertex or face as the root (0th corona), each (new) face in the $(n+1)$st corona shares a common incident vertex with a face in the nth corona. Let f_n denote the number of faces in the nth corona of T, and define $\varphi_T(z) = \sum_{n=0}^{\infty} f_n z^n$. Define growth rate $\gamma(T)$ to be the reciprocal of the radius of convergence of $\varphi_T(z)$. This generalizes J. Moran's definition of growth rate as $\lim_{n\to\infty}[\sum_{k=0}^{n+1} f_k / \sum_{k=0}^{n} f_k]$, which sometimes does not exist.

For normal tessellations T in the Euclidean plane, $\gamma(T) = 1$. They grow quadratically, while in the hyperbolic plane, $\gamma(T) > 1$ and growth is exponential. As every growth rate > 1 is realizable by some hyperbolic tessellation, it is more interesting to investigate those having edge-, vertex-, or face-homogeneity, where accretion rules make possible exact computation of $\gamma(T)$. These growth rates are bounded away from 1, and minimum values are found in all cases. In the case of edge-homogeneity, the authors' work is joint with T. Pisanski. (Received February 25, 2009)